SSCOR EVX®

Model 2309

Clearing The Airway Is Our #1 Priority

Operating Instructions & Maintenance Manual

SSCOR, INC.
11064 Randall Street
Sun Valley, CA 91352 USA

www.sscor.com
Email: marketing@sscor.com
techsupport@sscor.com

CE 0413

Tel 1+818-504-4054
Tel 1+800-434-5211

INTERTEK ISO 13485:2003

Caution-Notice

Revision R (12/13)

1. SSCOR suction units are not designed or intended for use in extended procedures that require prolonged high vacuum/low airflow applications, as is the case in wound drainage or endoscopic use or in any other procedure that produces high vacuum levels within an occluded system for an extended period of time. Turn the suction unit off when it is not in use.

2. Federal law restricts this device to sale, distribution, and use by, or on the order of a physician, emergency medical technician, or other medical practitioner. For use by medical personnel trained in suctioning techniques and in the use of medical suction equipment.

3. This manual is restricted to the discussion of the use and maintenance of this device. It does not attempt to discuss professional techniques in suctioning procedures.

4. Operator should be thoroughly familiar with these operating instructions before this device is used.

5. The suction pump must be reconnected to the battery charger after each use and remain connected until needed.

6. Do not use in the presence of flammable agents or anesthetics.

7. The shut-off valve in the canister lid will close down when the canister is filled with fluids.

8. Install a new canister before testing for vacuum over -300mmHg to minimize the possibility of implosion, which can occur when a canister is aged or damaged.

9. SSCOR's battery charger charges batteries only. The battery charger will not run the pump.

10. External equipment intended for connection to signal input, signal output or other connectors, shall comply with relevant IEC standard (e.g. IEC 60950 for IT equipment and the IEC 60601 series for medical electrical equipment). In addition, all such combinations – systems – shall comply with the standard IEC 60601-1-1, safety requirements for medical electrical systems. Equipment not complying with IEC 60601 shall be kept outside the patient environment, as defined in the standard. Any person who connects external equipment to signal input, signal output or other connectors has formed a system and is there fore responsible for the system to comply with the requirements of IEC 60601-1-1. If in doubt, contact qualified technician or your local representative.

SSCOR® EVX® Model 2309 Series—Battery Operated Portable Suction Pump

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General Description

SSCOR suction units are designed for hospital crash carts, patient transport and emergency medical service. The battery should be charged to a dependable working charge in 6 to 8 hours when connected to the charging source. Suction power can be regulated when full power may be considered harmful to the patient. SSCOR suction units are designed to provide instant, effective suctioning, independent of external sources of power and can be pre-set to be activated immediately upon reaching the distressed patient. All controls are clearly labeled and easily accessible.

The EVX is a portable, 12V DC battery operated suction device for resuscitation emergencies in prehospital care. The battery is recharged by direct connection to the vehicle, or an optional SSCOR fixed voltage charger (Model 2309 only). A fully charged battery at full capacity will power the unit for 30 - 45 minutes.

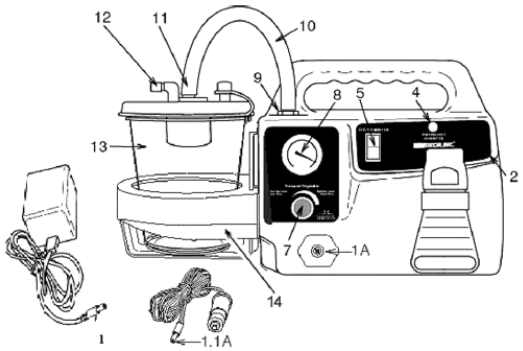
Warranty

SSCOR warrants that each new product is free from defects in material and workmanship under normal use and service for a period of one year from date of purchase. This warranty gives you specific legal rights and you may also have other rights that vary from jurisdiction to jurisdiction. For countries where minimum warranty terms are determined by statute, the warranty term is the longer of the statutory period or the term listed above.
Batteries, disposable items including collection canisters, patient tubing and catheters are excluded from this warranty.
See the SSCOR Warranty for terms and conditions, available on www.sscor.com

Description of Symbols

SYMBOL	LOCATION	MEANING
	Serialized Label	Type B Equipment
	Serialized Label	Separate Collection for Electronic Equipment
	Serialized Label	Attention - Consult Accompanying Documents
	Shipping Carton	Manufacturer
	Shipping Carton	Date of Manufacture
	Shipping Carton	Authorized Representative in the European Community
	Control Panel	On—Turn Pump On Off—Turn Pump Off

Getting Acquainted



Running the unit from DC power
1. Disconnect the power cord (1) and press the ON/OFF switch (5) on the control panel to start the vacuum pump.

Adjusting the vacuum level
• Occlude the patient tube and turn the vacuum regulator (7) clockwise to the stop.
• Observe gauge (located above the vacuum regulator). The vacuum reading should rise to -300mmHg from zero in 3 seconds. It should max out at approximately ≥ -525mmHg. Lower levels of negative pressure will be observed at altitude.

Battery Charging from AC Power using AC-DC Charger: The optional Fixed Voltage Charger will not run the pump. If battery charging from AC power is required, connect the SSCOR AC-DC charger (1) to an AC outlet. The charger connects to the unit through the receptacle (1A) on the front panel.

DC Battery Charging from Vehicle
Connect the DC power cord to the cigarette lighter receptacle in the vehicle or hard wire the DC power cord to the DC electrical system of the vehicle on a properly fused line in front of the master switch. Connect the electrical line cord to the suction unit by securely attaching the charging plug (1.1A) into the receptacle (1A). This charging method is designed to keep the battery charging at all times. If the suction unit is operated while it is hooked up to the vehicle it will utilize the vehicle power and save its own battery for emergency use. All SSCOR suction units have a diode to prevent drawdown from the pump to the vehicle electrical system and a fuse to protect the pump from vehicle electrical surges. If your suction unit is wired to the vehicle battery via an automatic load switch power supply, be sure to use a filter in order to eliminate any voltage spikes.

Battery Charging Verification
Once the unit is connected to the charging source, check the control panel (2). The “power source connected” LED (4), when lit, shows a good connection and indicates the battery is charging.

Charging the Battery Using the 8310 Charging / Retention Bracket (Model 2309BV Only):
Hard wire the Model 8310 Charging / Retention Bracket to the hot DC circuit (in front of the master switch). Make certain the circuit is properly fused according to appropriate vehicle standards. The vehicle electrical system will furnish power to both run the pump and charge the battery. See page 10 for additional information.

Battery Test

Run the following test whenever poor battery quality is suspected to ensure proper performance of the device

1. Check the power source connected LED on the control panel (4) is lit and charge the device overnight to ensure the battery is fully charged.
2. Remove the power cord and run the unit from its internal DC battery.
3. Check for vacuum by occluding the patient tube and set the vacuum regulator (7) to the maximum vacuum setting.
4. Observe the regulator gauge (8). The vacuum reading should rise to -300mmHg from zero in less than 3 seconds. It should max out at ≥ -525mmHg. Un-occlude the patient tubing.
5. Allow the unit to run for 15 minutes on DC power. If the unit stops or slows during the 15 minutes, it is possible the battery capacity has been depleted. It is time to replace the battery.
6. If the unit is still running at full power after 15 minutes, adjust the regulator to the desired setting, turn the device off and put it back on charge.

SSCOR recommends replacement of the battery after 3 years.

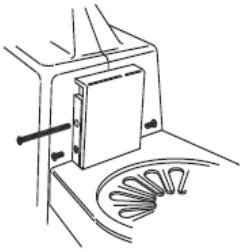
Troubleshooting

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
Unit does not function when switch is in the "ON" position	• Battery discharged • Molex connections disconnected	• Reconnect to battery charger • Open unit and check to see Molex connections are secure
Power source connected indicator light not lit	• Bad Connection • Power cord disconnected	• Open unit and check to see Molex connections are secure • Reconnect cord
No suction when pump is running	• Vacuum line loose • Canister damaged • Canister lid loose • Catheter thumb vent is open • Debris has collected in the pump	• Check vacuum line connections • Replace canister • Tighten canister lid • Occlude thumb vent • Refer to maintenance section of this manual

Internal Access for Electrical and Pneumatics

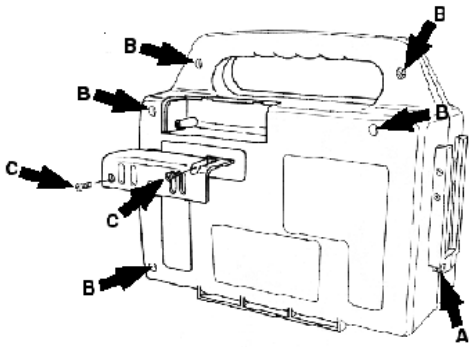
WARNING: DO NOT ATTEMPT TO SERVICE THIS EQUIPMENT IF YOU ARE NOT A QUALIFIED MEDICAL REPAIR TECHNICIAN

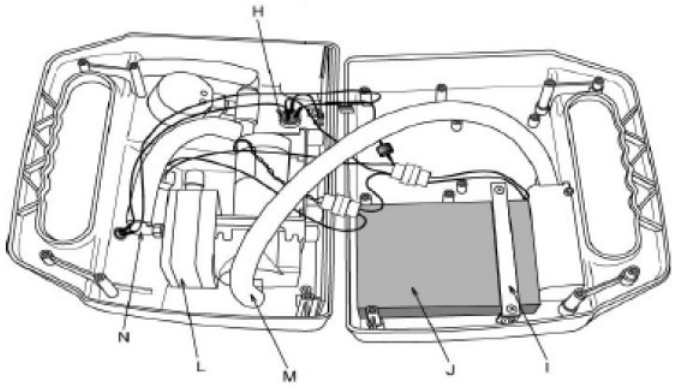
To open the unit, first remove the canister holder:
Remove the set screws on the canister bracket. Lift canister holder up and out of the main chassis.



The clamshell design enables access to internal components. All 6-32 Phillips head fastening screws are located in back of the unit.

REMOVE MAIN CHASSIS SCREWS
(A) 1 screw under the canister holder
(B) 2 screws in the back of the handle
(B) 3 screws in the back of the main chassis.
(C) It should not be necessary to open the exhaust door unless fluids have entered the system





(H) DC receptacle, Wiring Harness
(I) Battery Bracket
(J) Battery, 12V, Sealed Lead Acid
(K) N/A
(L) Vacuum pump. Return to SSCOR or authorized service center for service. Do not attempt to service the vacuum pump.
(M) Exhaust barb
(N) Vacuum barb

General Specifications

CHARACTERISTICS	SPECIFICATIONS
Size	17"L x 9"H x 6"W (43.2cm L x 22.9cm H x 15.2cm W)
Weight	8.6 pounds (3.9 Kgs.)
Vacuum Pump	12V DC., 3.0 A Clinical Airflow ≥ 30LPM Exceeds 525mmHg
Variable Regulator (7)	Controls negative pressure from < -50 to ≥ -525mmHg
Gauge (8)	Calibrated in mmHg. Color-coded
Power Source: Battery (DC Power)	Rechargeable Sealed Lead Acid. SSCOR part # 80638. 45 (± 10%) minute running time
Switch	On/Off Rocker
Collection Canister	1200cc/ml SSCOR part #48041
Patient tubing	Vinyl tubing 9/32”ID x 72”L SSCOR part #43200
Suction Tip	HI-D® “Big Stick®” Large Bore Suction Tip with thumb control. SSCOR part #44241C

Troubleshooting

Preventive Care: Observe the following maintenance routine to ensure readiness at any time:

1. When the SSCOR aspirator is not in use, keep batteries on continuous charge.
2. Test the SSCOR aspirator at regular intervals; See page 6.
3. Make sure the SSCOR aspirator is always clean and ready for use.
4. If the procedure produced an excessive quantity of fluids, check the vacuum line (1) for evidence of moisture. If the vacuum line between the pump and canister is moist, it is possible that fluids have reached the vacuum pump. See Disinfection Instructions (page 9).
5. If the vacuum pump appears defective, return the unit to the factory for repair. Do not attempt to repair the vacuum pump.
6. For technical assistance, call (800) 434-5211 or international +1 (818) 504-4054.

NOTE: No part requires lubrication and lubricants should not be used.

Maintenance

As soon as possible after use, the single use disposable canister, patient tubing and catheter should be discarded according to local / regional / national requirements for the disposal of hazardous waste materials. Clean the exterior of the SSCOR suction unit using a mild detergent and clear water by dampening a clean lint free cloth. Rinse using clear water and another damp clean lint free cloth to remove any detergent residue.

NOTE: The hydrophobic filter in the canister helps to ensure that no moisture or particulate matter reaches the inside of the device. When fluids fill the canister, the positive (mechanical float) shutoff valve closes immediately, shutting the vacuum port off so as to prevent fluid from contacting the pump. The filter has been tested by the manufacturer (Bemis) to screen out aerosolized microorganisms and particulate matter at a bacterial efficiency rating of 99.99% DOP. The canister also has sidewall gradation marks starting at 100 ml/cc and at every 50 ml/cc up to 1200 ml/cc indicating the fill level of the canister.

In the unlikely event that fluids may have reached the vacuum pump, read the disinfection section. Your engineering department will have to open the unit to check the condition of the pump.

Do not reuse any single use disposable parts; do not submerge the device into any liquid, this will void the warranty and cause the device to malfunction.

Disinfection

Use personal protective equipment such as gloves, a smock, and face and eye protection when handling units that are suspected to be contaminated.

Part	Cleaning and Disinfecting
Collection Canister	Disposable item, re-use not permitted. Use new canister for each patient.
Patient Tubing	Disposable item, re-use not permitted. Use new patient tubing for each patient.
HI-D® Stick	Disposable item, re-use not permitted. Use new HI-D Stick for each patient.
Vacuum Pump	Wipe with damp cloth or disinfectant wipe. Sterilization not permitted. Vacuum pump should be replaced if contaminated
Chassis	Wipe with damp cloth or disinfectant wipe. Sterilization not permitted.

Caution: Disconnect the unit from any power source prior to cleaning the unit.

Disinfect the unit using a mild surface disinfectant, such as a 10:1 mixture of water and bleach. The unit is designed to suction contaminated fluids, which should be removed from the system immediately after use. In the unlikely event that fluids may have reached the vacuum pump, your engineering department will have to open the unit to check the condition of the pump. When cleaning the interior of the chassis, disconnect the battery from the wiring harness. The only foreseeable way fluids may reach the vacuum pump is the filter in the canister has been compromised or bypassed.

For technical assistance, call (800) 434-5211 or +1 (818) 504-4054

Charging/Retention Bracket Mounting Instructions
The Model 8310 Charging/Retention bracket can be mounted by the base or mounted vertically in order to hold the SSCOR EVX portable suction unit. Mount the retention bracket to a suitable safe mounting surface so the indicator lights on the control panel are visible to the user. The unit is shipped ready to be mounted vertically, but if that does not fit your requirements, you can easily modify the unit to mount it by the base. Note: the mounting bracket will hold the EVX in place to a force of 10G. Select and prepare a mounting surface, and take care in the mounting procedure, so the bracket and pump will be secure at a force equal to, or greater than, 10G.

Vertical Mount
Remove the four ¼-20 x 1-1/2" hex head screws from hardware packet. Mark the hole placement for a vertical mount and use a 5/16"drill to drill the holes. Coat the screws with Loctite (not supplied) before securing the Charging/Retention Bracket. Put the four 1-1/2" screws through the holes in the charging bracket (Model 8310). Reattach the washers and nuts to the screws to secure the Charging/Retention bracket in place.

Base Mount (part #8314-7)
Mark the hole placement for a base mount and use a 5/16" drill to drill the holes. Remove the hardware from the hardware packet. Coat the screws with Loctite (not supplied) and place the screws through the bottom of the Bracket, Retention - Counter Mount (#8314-7) and through the holes you have drilled. Reattach the washers and nuts to secure the Bracket, Retention – Counter Mount (#8314-7) in place. Mount the charging bracket (Model 8310) to the base mount (#8314-7) using the hardware in the hardware packet. Coat the screws with Loctite (not supplied) before securing the Charging/Retention Bracket to the base mount bracket (#8314-7).

Electrical
Hard wire the Charging / Retention Bracket to the DC Electrical System of the vehicle in front of the master switch. Make certain that the circuit is properly fused according to appropriate vehicle standards.